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& P A R T N E R S

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TRANSLATION

**DECISION ON GRANT  
PATENT FOR INVENTION**

(21) Application № **2005131621/14(035452)**

(22) Date of filing the application **11 March 2004**

Basing on the results of substantive examination of the patent application conducted in respect to

☐ claimed invention

☒ claimed group of inventions

the concordance thereof to the subject of patent rights and the requirements of patentability set forth by the Civil Code of the Russian Federation has been revealed and in this connection decision to grant the Patent of the Russian Federation on the invention is made.

The Conclusion on results of the consideration on merits is enclosed.

Director General

Boris Simonov



**CONCLUSION ON RESULTS OF THE CONSIDERATION ON MERITS**

- (21) Application № **2005131621/14(035452)**. (22) Date of filing the application **11 March 2004**  
(24) Date from which industrial property rights may have effect **11 March 2004**  
(85) Date of commencement of the national phase **13 October 2005**

**PRIORITY IS FIXED ON DATE**

- ☐ (22) Date of filing the application  
☐ (23) Date of filing of additional materials of to the earlier application №  
☒ (62) ☒ priority date of the application № of from which the present application has been divided up  
☐ filing date of the application № of from which the present application has been divided up  
☐ (66) Filing date of the earlier application №  
☐ (30) Data relating to priority under the Paris Convention  
(31) Number assigned to (32) Date of filing priority (33) Country code  
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- (72) Inventor(s) **TORBATI, Eldad, IL**  
(73) Assignee(s) **ALPHATECH MEDICAL SYSTEMS LTD., IL**  
(54) Title **CELLULITE ULTRASOUND TREATMENT**

The Examination department basing on the results of substantive examination of the patent application conducted in respect to

- ☐ originally filed claims ☒ claims amended by the Applicant

has revealed their concordance to the requirements of patentability set forth by the Articles 1349 and 1350 of the Civil Code of the Russian Federation and decided to grant the Patent of the Russian Federation for the following claims:

**ALLOWED CLAIMS (RUSSIAN PATENT OFFICE)**

1. A treatment system for reducing body perimeter at a region of treatment, said treatment system comprising:

an ultrasound apparatus, for transmitting ultrasound waves to said  
5 region of treatment, at a minimum intensity of  $1.5 \text{ W/cm}^2$ ; and

an electrical stimulation apparatus, for applying electrical stimulation to said region of treatment simultaneously with said transmission of ultrasound waves, wherein said electrical stimulation comprises interferential stimulation.

- 10 2. The treatment system of claim 1, wherein said reduction of body perimeter comprises reducing or eliminating cellulite.

- 15 3. The treatment system of claim 1, wherein said reduction of body perimeter comprises reducing body fat.

4. The treatment system of claim 1, wherein said reduction of body perimeter comprises reduction of body perimeter in a human or an animal.

- 20 5. The treatment system of claim 1, wherein said reduction of body perimeter comprises reduction of body perimeter in regions of the body selected from the list consisting of: legs, thighs, knees, buttocks, abdomen, and arms.

6. The treatment system of claim 1, wherein said system is utilized to reduce or eliminate stretch marks.
7. The treatment system of claim 6, wherein said stretch marks are located on the abdomen and mid-sections of women.
8. The treatment system of claim 1, wherein said system is utilized to reduce or eliminate at least one selected from the list consisting of: sagging skin, skin having stretch marks on it, and skin affected by cellulite.
9. The treatment system of claim 8, wherein said sagging skin comprises upper arm skin.
10. The treatment system of claim 8, wherein said system is utilized to render the general appearance of said sagging skin to look and feel smooth, or to return said appearance of said sagging skin to the state it appeared before sagging.
11. The treatment system of claim 1, wherein said ultrasound apparatus is operational at a frequency ranging between 1 to 4 MHz.
12. The treatment system of claim 1, wherein said ultrasound apparatus is operational at an intensity of approximately  $3 \text{ W/cm}^2$ .

13. The treatment system of claim 1, wherein said ultrasound apparatus is operational for a duration of 40 to 45 minutes per session.
14. The treatment system of claim 1, wherein said ultrasound apparatus is operational substantially at a frequency of approximately 3 MHz.
15. The treatment system of claim 1, wherein said ultrasound apparatus is operational substantially at a frequency of approximately 1 MHz.
16. The treatment system of claim 1, wherein the operational frequency of said ultrasound apparatus is varied over time.
17. The treatment system of claim 1, wherein pressure exertion is provided on said region of treatment during said transmission of ultrasound waves.
18. The treatment system of claim 17, wherein said pressure exertion comprises manual pressure with a transducer head of said ultrasound apparatus against said region of treatment.
19. The treatment system of claim 18, wherein said transducer head is designed to allow providing a massaging action to said region of treatment.
20. The treatment system of claim 19, wherein said transducer head is designed to allow said massaging action in a way selected from the list consisting of:

small circular motions all the while keeping the wrist straight, and  
tilting and moving the wrist in different directions repetitively.

21. The treatment system of claim 17, wherein said system comprises means  
5 for providing said pressure exertion via mechanical massaging.
22. The treatment system of claim 17, wherein said system enables said  
pressure exertion via manual massaging.
- 10 23. The treatment system of claim 17, wherein said pressure exertion  
comprises a massage given by bare hands.
24. The treatment system of claim 1, wherein said electrical stimulation  
apparatus is operational at an intensity range between 5 mA to 90 mA.
- 15 25. The treatment system of claim 1, wherein said electrical stimulation  
apparatus is operational in a frequency range between 5 Hz to 150 Hz.
26. The treatment system of claim 1, wherein said interferential stimulation is  
20 selected from the list consisting of:
- premodulated;
  - biphasic;
  - interferential (I/F) Isoplanar (4 poles);
  - interferential (I/F) Vectorial (4 poles); and
  - 25 medium frequency (M/F).

27. The treatment system of claim 1, wherein said interferential stimulation is used in a pattern variation, wherein said pattern variation lasts for varying durations, wherein said pattern variation comprises changing said  
5 interferential stimulation during a treatment session.

28. The treatment system of claim 25, wherein the frequency of operation of said electrical stimulation apparatus is varied over time within said frequency range.

29. The treatment system of claim 28, wherein said variation over time of said frequency of operation of said electrical stimulation apparatus is selected from the list consisting of:

applying a first frequency for a fixed amount of time before switching  
15 to a second frequency;

gradually changing frequencies from a first frequency to a second frequency over various time durations; and

intermittently applying extreme frequencies within said frequency range.

30. The treatment system of claim 1, wherein the rate of a variation of an operational frequency of said ultrasound apparatus is inversely proportional to an operational parameter of said electrical stimulation apparatus, said operational parameter selected from the list consisting of:

25 the rate of variation of operational frequency;

the rate of variation of intensity; and

the rate of variation of an operational pattern.

31. The treatment system of claim 1, wherein said ultrasound apparatus is  
5 used in conjunction with a gel rubbed on said region of treatment.

32. The treatment system of claim 1, further comprising a camera.

33. The treatment system of claim 1, further comprising a processor.

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34. The treatment system of claim 1, further comprising a measuring  
apparatus.

35. The treatment system of claim 34, wherein said measuring apparatus  
15 further comprises a pressure gauge.

36. A treatment method for reducing body perimeter comprising the  
procedures of:

transmitting ultrasound waves to a region of treatment, at a minimum  
20 intensity of  $1.5 \text{ W/cm}^2$ ; and

applying electrical stimulation to said region of treatment, wherein  
said electrical stimulation comprises interferential stimulation.

37. The method of claim 36, wherein said reduction of body perimeter  
25 comprises reducing or eliminating cellulite.



38. The method of claim 36, wherein said reduction of body perimeter comprises reducing body fat.
- 5 39. The method of claim 36, wherein said reduction of body perimeter is utilized for the body of a human or an animal.
40. The method of claim 36, wherein said area of treatment comprises regions of the body selected from the list consisting of: legs, thighs, knees, buttocks, abdomen, and arms.
- 10
41. The method of claim 36, wherein said treatment method is utilized for reducing and eliminating post-pregnancy stretch marks on the abdomen and mid-sections of women.
- 15
42. The method of claim 36, wherein said treatment method is utilized for reducing and eliminating at least one selected from the list consisting of: sagging skin, skin having stretch marks on it, and skin affected by cellulite.
- 20 43. The method of claim 42, wherein said sagging skin comprises sagging upper arm skin.
44. The method of claim 36, wherein said treatment method is utilized for at least one of the list consisting of:

rendering the general appearance of said sagging skin to look and feel smooth; and

returning said appearance of said sagging skin to the state it appeared before sagging.

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45. The treatment method of claim 36, wherein said procedure of transmitting ultrasound waves comprises transmitting ultrasound waves at a frequency ranging between 1 to 4 MHz.

10 46. The treatment method of claim 36, wherein said procedure of transmitting ultrasound waves comprises transmitting ultrasound waves at an intensity of approximately 3 W/cm<sup>2</sup>.

15 47. The treatment method of claim 36, wherein said ultrasound waves are transmitted for a duration of 40 to 45 minutes.

48. The treatment method of claim 36, wherein said ultrasound waves are transmitted substantially at a frequency of approximately 3 MHz.

20 49. The treatment method of claims 36, wherein said ultrasound waves are transmitted substantially at a frequency of approximately 1 MHz.

50. The treatment method of claim 36, wherein the frequency of said ultrasound waves is varied over time.

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51. The treatment method of claim 36, wherein pressure exertion is provided on said region of treatment during said transmission of ultrasound waves.

52. The treatment method of claim 51, wherein said pressure exertion  
5 comprises manual pressure with a transducer head of an ultrasound apparatus against said region of treatment.

53. The treatment method of claim 52, wherein said transducer head is used to provide a massaging action to said region of treatment.

54. The treatment method of claim 53, wherein said massaging action  
10 comprises moving said transducer head in ways selected from the list consisting of:

small circular motions all the while keeping the wrist straight; and  
15 tilting and moving the wrist in different directions repetitively.

55. The treatment method of claim 51, wherein said pressure exertion comprises mechanical massaging.

56. The treatment method of claim 51, wherein said pressure exertion  
20 comprises manual massaging.

57. The treatment method of claim 51, wherein said pressure exertion comprises a massage given by bare hands.

58. The treatment method of claim 36, wherein said procedure of applying electrical stimulation comprises applying electrical stimulation at an intensity range between 5 mA to 90 mA.
- 5 59. The treatment method of claim 36, wherein said procedure of applying electrical stimulation comprises applying electrical stimulation at a frequency range between 5 Hz to 150 Hz.
60. The treatment method of claim 36, wherein said interferential stimulation is  
10 selected from the list consisting of:
- premodulated;
  - biphasic;
  - interferential (I/F) Isoplanar (4 poles);
  - interferential (I/F) Vectorial (4 poles); and
  - 15 medium frequency (M/F).
61. The treatment method of claim 36, wherein said interferential stimulation is used in a pattern variation, wherein said pattern variation lasts for varying durations, and wherein said pattern variation comprises changing said  
20 interferential stimulation during a treatment session.
62. The treatment method of claim 59, further comprising the procedure of varying the frequency of operation of said electrical stimulation over time within said frequency range.
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63. The treatment method of claim 62, wherein said variation over time of said frequency of operation is selected from the list consisting of:

applying a first frequency for a fixed amount of time before switching to a second frequency;

5 gradually changing frequencies from a first frequency to a second frequency over various time durations; and

intermittently applying extreme frequencies within said frequency range.

10 64. The treatment method of claim 36, further comprising the procedure of varying an ultrasound frequency, wherein the rate of a variation of said ultrasound frequency is inversely proportional to an operational parameter of said electrical stimulation apparatus, said operational parameter selected from the list consisting of:

15 the rate of variation of operational frequency;

the rate of variation of intensity; and

the rate of variation of an operational pattern.

65. The treatment method of claim 36, further comprising the procedure of  
20 applying a gel rubbed on said region of treatment in conjunction with said transmission of ultrasound waves.

66. The treatment method of claim 36, further comprising the procedure of:  
recording said treatment method using a camera.

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67. The treatment method of claim 66, further comprising the procedure of:

using a processor for controlling said electrical stimulation, said ultrasound waves, and said camera, and for recording a patient's measurements.

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68. The treatment method of claim 36, further comprising the procedure of measuring said body perimeter for determining reduction thereof, said procedure of measuring comprising the sub-procedures of:

standing a patient in an upright position, with said patient's arms  
10 down in order to maintain a consistent posture;

measuring and recording the height of a region of treatment from the floor in order to maintain a consistent vertical point from the floor at which a circumference measurement is taken;

measuring said region of treatment using a measuring apparatus with  
15 a pressure gauge attached to it in order to maintain a constant pressure on the skin;

measuring said region of treatment in a horizontal fashion, such that said measuring apparatus is placed around said region of treatment in a plane parallel to the floor on which said patient is standing;

20 measuring said region of treatment using said measuring apparatus with said pressure gauge attached to it with a given pressure exerted on said region of treatment and recording said measurement; and

measuring said region of treatment a subsequent time thereafter using said measuring apparatus with said pressure gauge attached to it at  
25 said height of said region of treatment from the floor with said given

pressure exerted on said region of treatment, with said measuring apparatus being in a horizontal plane parallel to the floor while measuring said region of treatment.

(54) CELLULITE ULTRASOUND TREATMENT

Abstract

(57) A group of the inventions is related to the devices and methods of treatment for reducing body perimeter, primarily aimed at reducing cellulite and/or fat at a region of treatment. The treatment system comprises an ultrasound apparatus for transmitting ultrasound waves to the region of treatment, and an electrical stimulation apparatus for applying electrical stimulation to said region of treatment simultaneously with said transmission of ultrasound waves. The method of treatment consists in the procedures of transmitting ultrasound waves to a region of treatment, and applying electrical stimulation to the same, wherein said electrical stimulation comprises interferential stimulation. The use of the inventions improves the efficiency of the treatment of cellulitis.